exceeded the width allowed by law, as it would put many tradespeople to inconvenience; but when a new front was erected, they gave notice to have it so constructed as not to infringe upon the foot pavement. The old front at Mr. Deane's might have existed for more than twenty years. It was originally a gunmaker's shop, and witness remembered the old front as long as he could recollect anything in the parish.—Mr. Henry, on hearing this, said that, as the commissioners admitted that the front had existed for years in the same position as the new front complained of, the present one being in fact equivalent to a repair of the old one, he did not think they had any right to require Mr. Deane to remove it; he therefore dismissed the case. Mr. Parry wished to know whether he could appeal against this decision, but was informed by Mr. Henry that there was no appeal.

Transmutation of Metals.—Although the days of the alchemists are gone, the alembic of nature is still in operation, and changes in the material of which this globe is composed are continually going on; perhaps, in many instances, unobserved. We are led to these remarks from a specimen we saw lately of an unquhile cast-iron pipe, that had been used in this neighbourhood for carrying gas, and had been laid some years in a peat soil. The cast-iron was completely changed into black-lead or plumbago. It stained paper the same as a pencil. Its specific gravity had been reduced from the common gravity of cast metal, say 7.7 to 2.06. The original thickness of the pipe we have no means of ascertaining, but we should think it a good deal increased. Whether the carburetted hydrogen alone can produce such changes, or if it is a combination of that and the peculiar soil, we cannot tell; but as we believe the pipes in many places here have given way, those connected with the gas management should look into the matter, and see if something could not be applied to the pipes before they are put down, to prevent the constant loss and trouble attending this natural source of decay.—*North of Scotland Gazette.*

Cutler's Patent Lap-Welded Iron Tubes.—[Patentee, Job Cutler, C.E., Birmingham. Patent dated January 13, 1848, for certain improvements in welded iron pipes or tubes to be used as the flues of steam-boilers. Specification enrolled July 13, 1848.] The patentee states that the object of his invention is to produce lap-welded iron tubes or pipes, so formed as to give increased strength to those parts which are exposed to wear, without additional weight to the entire length of the tube, and thereby to obviate the evils to which boiler tubes are at present exposed. He proposes to effect this by making the internal diameter of the tube greater at one end than at the other, instead of its being the same or uniform throughout, as has hitherto been the case; the external diameter remaining, however, the same, and uniform throughout the entire length of the tube. The tube will, of course, be cylindrical upon the exterior, and conical upon the interior surface. The increased thickness of metal at the one end is to be drawn from the remaining portion of the entire length of the tube. And further, the operation is effected at one heat, so that the ductility of the iron of which the tubes are composed shall remain unimpaired. The *modus operandi* is as follows:—The patentee employs a series of grooved rolls, moved by suitable toothed wheels and a mandril, with a conical bulb or head, the stem of which is of increasing diameter towards the opposite end. The skelp, after being properly prepared, as is usual in the manufacture of lap-welded iron tubes, is heated and passed between the first of the series of rolls. It is then welded over the conical bulb, and forced at the same time over the stem of the mandril. This mandril is held by a grip, attached by a hinge thereto in a stop, so as to allow of its being lowered and passed, after the conical bulb has been removed, between the second series of rolls, the diameter of the groove of which is smaller than that of the first series. The tube, with the mandril still inside, is passed through the third series of rolls, the groove of which is smaller than that of the second series. The object of these successive rollings, after the skelp has been welded on the mandril, is to remove any irregularities upon either of the surfaces, and to make the edges of the tube perfectly smooth and uniform. The tube is then taken to the drawing bench, in front of which is a stop, and against which the pipe rests. The stop is furnished with a hole to allow of the passage of the grip of the mandril, which is held tight by a pair of pliers: and the bench being made to move while the pipe remains stationary, the mandril is withdrawn. When it happens that the mandril adheres too tightly to the tube, it is proposed to heat it in a muffle or furnace, then to cool the end which rests against the stop, and repeat the above operation, or to roll it cold between three rollers, as is usually done in straightening shafting.—*Mechanics' Magazine.*

The new Railway Works at Newcastle.—In their account of the late opening of the high level bridge across the Tyne, one of the local papers gives a description of the new works, to which we are indebted for the following particulars:—The approaches from the south and north are themselves extensive works, comprising bridges, viaducts, and embankments: the whole works contain upwards of 1,200,000 cubic feet of masonry. From the southern approaches the line is carried over a platform supported by cast-iron pillars, which rest partly upon sleeper walls, carried up to the height of the carriage roadway; and also upon three semicircular arches of 22 ft. 9 in. span, and one of 36 ft. 3 in., the north abutment of the latter being at Pipewellgate, and from which the cast-iron arches of the bridge spring: the cast-iron pillars are bound together at the top by longitudinal and transverse trough-girders. Between this point and the river pier on the south side, the cast-iron arch and roadway are nearly completed. From the middle of the first arch the line curves to a temporary timber viaduct erected along the west side of the intended bridge. The height of this viaduct is 120 ft. to the level of the rails; it is built upon piles, which are driven between thirty and forty feet into the bed of the river. On reaching the north side of the river the temporary line is curved into the permanent line at the bridge over the Close, there being a strong abutment, from which the cast-metal arches spring. The height of the arch over the Close is 103 ft. to the level of the rails, and the span is 36 ft. 3 in. This is the highest point of the line, on either the south or the north shore. The line then curves to the west, along the south side of the Castle Garth to Clavering-place, which is crossed by a skew bridge; and there is another skew bridge over the deviation of the Postern. The retaining walls of the embankment here form one side of the Postern and Bailiff-gate. The permanent line will run westward into the general station at the Forth as soon as it is completed. There is room all the way along this part for five lines of railway. The junction between the temporary and the permanent line is a little west of the Norman Keep, by the north side of which the permanent line proceeds eastward. The viaducts on the north side, as well as the high level bridge, are under the contracts of Messrs. Rush and Lawton, who have here set as much as 22,000 cubic feet of ashlar work. Having upwards of 200 parties to treat with, the works were set out in detached portions, yet no alteration or reconstruction was required at any one point.

Projected Works.—Advertisements have been issued for tenders by 21st inst., for the building of a Presbyterian Church at South Shields; by dates not specified, for the erection of two martello towers in Pembroke dockyard; and for the erection of a workhouse at Wokingham (extension of time); by 26th inst., for the erection of houses and carriage sheds for the South-Eastern Railway Company (extension of time); by 18th, for the erection of a canal store for the Poplar Union; by 20th, for paviours' and masons' works in St. James's, Westminster; by 29th, for the building of a police station and lock-up at Shotley-bridge (Durham); by 9th proximo, for making an oval sewer with branches, &c., at Bristol; by 3rd, for the construction and erection of a wrought iron swing bridge at Belfast; by 20th inst., for a supply of 70 tons of iron rails for the Cornwall Railway Company; by 20th, for a supply of British iron, best plate iron, &c., for the East-India Company; and by 28th inst, for a supply of stone ground or plate glass for the navy.

Prevention of Boiler Explosions.—Mr. Heath, C. E., and mine surveyor, of Hanley, in the Potteries, thus describes a regulator which he has adopted:—A water tank, formed of iron water-pipes—say 12 inches diameter—is placed conveniently to the boiler, with a cover bolted down steam tight, and from the top a communication with a reservoir. From the bottom a pipe proceeds into the side of the boiler above the usual water line, terminating in a rose end, and a valve opens outwards from the tank, weighted to any required pressure. The boiler is furnished on its top with two special valves, with weights inside, and covered by a box, to be kept locked. From this box a pipe proceeds to the upper part of the tank above the water line. Should the usual safety-valve become fast, or incapable of letting off sufficient steam, the valves in the box admit a rush of steam to the surface, when the pressure acts on the column of water, forcing a stream in the form of rain through the steam in the boiler, which it condenses, taking off the pressure, and the valves immediately close. The whole is thus self-acting, and only needs regulating the weights to the power required.

The New Suspension-bridge at Niagara Falls.—It makes the head dizzy to look at it, says the *Albany Journal*, and yet it is traversed with as much security as any other bridge of the same width. We were present while the workmen were engaged in hanging the planks over the fearful chasm. It looked like a work of peril, but it was prosecuted with entire safety. Not an accident has happened since the first chord was carried across the river at the tail of a kite. It is impossible to give the reader a clear idea of the grandeur of the work. Imagine a foot bridge 800 feet in length, hung in the air, at the height of 230 feet over a vast body of water rushing through a narrow gorge at the rate of 30 miles an hour. If you are below it, it looks like a strip of paper suspended by a cobweb. When the wind is strong, the frail, gossamer looking structure waves to and fro as if ready to start from its fastenings, and it shakes from extremity to centre under the firm tread of the pedestrian. We saw the first person pass over it—Mr. Ellet, the builder. His courageous wife soon followed him, and for two days hundreds, attracted by the novelty of the thing, took the fearful journey. Strange as it may seem, there were those who had no hesitation to slide over the awful chasm in a basket, upon a single wire cable, who could not be induced to walk over the bridge. When you find yourself suspended in the air, with the roaring, rushing, boiling Niagara 250 feet below you, if your heart don't flutter, you will have nerve enough to swing over Vesuvius!

Gas in Cheltenham.—A correspondent writes as follows:—The Cheltenham Gas-light Company make the following charges—Under 5,000 cubic feet, 7s. 6d. per 1,000, 5 per cent. dividend; if 5,000 and under 10,000, 10 per cent.; if 10,000 and under 50,000, 15 per cent.; if 50,000 and under 200,000, 20 per cent.; if 200,000, 25 per cent. The company charge 10s. per annum for the meter; and all service-pipes and fittings are executed by a person authorised by them. Their customers are obliged to pay upon their estimated consumption each half-a-year in advance—as good as a 5 per cent. added to the charge. The multitude of smaller consumers have no deduction of per centage, though they equally would be obliged to pay in advance. The Cheltenham Gas Company would no doubt declare a small dividend upon their outlay, and attempt to prove the justice of plundering the public by charging highly for a *costless article*. So did the gas makers in Liverpool, where the charge, I believe, was 10s. per 1,000 cubic feet, till they reduced the price to 4s. 6d. per 1,000 cubic feet; and now they receive 10 per cent. on their capital. The price of the best coals at Cheltenham is 16s. per ton.

Oaks.—The following are said to be the largest British oaks which we have on record:—The Cowthorpe, in Yorkshire, which measured 48 feet in circumference at a yard from the ground; the Shrewsbury, 44 feet at the bottom; the Essex, 36 feet at the bottom, and known by the name of "Fairtop;" and the Hatfield, 38 feet circumference and 120 feet high.

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